

WE CLAIM:

1. A method of routing a data packet through a foreign agent to a wireless node, comprising the steps of:

receiving said data packet at said foreign agent from a home agent associated with said wireless node;

5 associating a home Internet Protocol (IP) address and a home agent IP address contained in said data packet with a Point-to-Point Protocol (PPP) link address in said foreign agent, said PPP link address associated with a PPP link established between said foreign agent and said wireless node; and

10 forwarding said data packet through said foreign agent to said PPP link for transmission to said wireless node.

2. The method of claim 1, wherein said foreign agent maintains a table mapping PPP link addresses to unique pairs of home IP addresses and home agent IP addresses, and wherein said step of associating is performed automatically in said foreign agent by reference to said table, whereby multiple wireless nodes having the same home IP addresses but different home agent IP address may be distinguished from each other in said table.

3. The method of claim 2, wherein said foreign agent comprises a remote access server having a plurality of ports, each port for establishing a PPP link with a wireless node.

4. In a foreign agent for a plurality of wireless nodes, the improvement comprising:
providing a software program in said foreign agent for handing routing of packets
through said foreign agent for said plurality of wireless nodes having a common home network
address, said software program comprising a set of instructions:

5 (c) maintaining a table uniquely identifying links that connect said foreign agent to said
plurality of wireless nodes to home agent addresses and home network addresses for
said wireless nodes; and

(d) associating packets to be transmitted to said plurality of wireless nodes to the
uniquely identified links,

10 whereby wireless nodes having the same home network addresses but different home
agent addresses may be distinguished from each other in said table and proper routing of packets
through said foreign agent to or from said wireless nodes may be achieved.

5. The improvement of claim 4, wherein said table has the form illustrated in Figure 2.

6. The improvement of claim 4, wherein said set of instructions comprises a set of
instructions illustrated in Figure 3.

7. The improvement of claim 4, wherein said set of instructions are executed by a routing
card providing an interface between said foreign agent and an Internet Protocol (IP) network.

8. The improvement of claim 4, wherein said foreign agent comprises a remote access server.

9. The improvement of claim 8, wherein said remote access server provides at least 24 ports capable of establishing PPP links with at least 24 wireless mobile nodes, and wherein each of said PPP links is uniquely identified in said table.

10. The improvement of claim 8, wherein said home agent address comprises a home agent Internet Protocol (IP) address, wherein said home network address comprises a home IP address, and wherein said link is uniquely identified by a Point-to-Point Protocol (PPP) link address.

11. A method of routing a data packet through a foreign agent to a mobile wireless node, comprising the steps of:

establishing a Point-to-Point Protocol (PPP) link between said foreign agent and said node, said PPP link having a PPP link address;

processing a registration request message from said node and registering said node;

storing in a table a home agent Internet Protocol (IP) address for a home agent for said node, a home IP address for said node, and a PPP link address for said node, said home Agent IP address and said home IP address uniquely associated with said PPP link address in said table;

receiving a packet from said home agent;

decapsulating said packet; and

forwarding said packet to said PPP link, said step of forwarding performed by reference to said table.

12. A method of routing a data packet through a foreign agent from a wireless node to a home agent, comprising the steps of:

establishing a Point-to-Point Protocol (PPP) link between said foreign agent and said node, said PPP link having a PPP link address;

processing a registration request message from said node and registering said node;

storing in a table a home agent Internet Protocol (IP) address for said home agent for said node, a home IP address for said node, and a PPP link address for said node, said home Agent IP address and said home IP address uniquely associated with said PPP link address in said table;

receiving a packet from said node via said PPP link;

encapsulating said packet; and

forwarding said packet to said home agent, said step of forwarding performed by reference to said table to determine said home agent IP address from said PPP link address.

13. In a foreign agent for a plurality of wireless nodes, the improvement comprising: providing a software program in said foreign agent for handling routing of packets through said foreign agent for said plurality of wireless nodes having a common home network address, said software program comprising a set of instructions:

(a) maintaining a table uniquely identifying links that connect said foreign agent to said plurality of wireless nodes to home agent addresses and home network addresses for said wireless nodes; and

(b) associating packets received from said wireless nodes at said foreign agent to home

agents for said wireless nodes,
whereby multiple wireless nodes having the same home network addresses but different home agent addresses may be distinguished from each other in said table and proper routing of packets through said foreign agent to said home agents may be achieved.

14. The improvement of claim 13; wherein said table has the form illustrated in Figure 2.

15. The improvement of claim 13, wherein said set of instructions comprises a set of instructions illustrated in Figure 4.